

quantity of field-ice. S. S. "Hohenstaufen," from N. 43° 28', W. 48° 26', to N. 42° 56', W. 49° 25', passed through large fields of ice and saw several icebergs. S. S. "Ohio," in N. 44° 40', W. 45° 40', saw an iceberg; at midnight fell in with field-ice, and got clear of it on the 24th in N. 42° 36', W. 50° 00'. S. S. "Gloucester," in N. 44° 02', W. 47° 18', sighted numerous icebergs and field-ice; steamed southward, and on the 24th was surrounded by field-ice; had port bow damaged. Bark "Geo. Peabody" was abandoned in the ice in N. 42° 22', W. 48° 57', with bows stove and rudder damaged. S. S. "Circassian," in N. 43° 50', W. 46° 05', passed a large quantity of field-ice; to the northward the ice appeared closely packed, with several large bergs amongst it.

24th.—S. S. "Ohio," in N. 42° 30', W. 51° 00', passed an iceberg about seventy-five feet high and a quarter of a mile long. S. S. "Circassian," in N. 43° 21', W. 47° 17', passed a large iceberg; in N. 43° 10', W. 49° 06', met light field-ice, and in N. 42° 20', W. 51° 00', sighted an iceberg to the northward.

25th.—S. S. "California," in N. 42° 05', W. 49° 45', passed an iceberg and some field-ice. S. S. "Wieland," in N. 42° 13', W. 50° 20', passed some field-ice.

26th.—S. S. "State of Alabama," in N. 44° 13', W. 48° 56', fell in with large quantities of field-ice, which extended to N. 42° 31', W. 49° 31'; also passed several icebergs. S. S. "Serbia," in N. 43° 14', W. 48° 13', passed several icebergs and much field-ice. S. S. "Pennland," from N. 43° 34', W. 48° 37', to N. 42° 10', W. 50° 36', passed six icebergs and large fields of ice. S. S. "Rhein," in 44° 25', W. 45° 37', passed a large iceberg; also in N. 43° 53', W. 48° 40', passed fifteen others; in N. 43° 45', W. 49° 10', met an enormous field of ice—could not see open water; the field was about thirty-six miles in length.

27th.—S. S. "Azalea," in N. 47°, W. 44°, passed several icebergs.

28th.—S. S. "Norseman," at Boston, reported that from N. 43° 30' to N. 42°, and from W. 47° to W. 50°, she steamed along a solid wall of ice for a distance of one hundred and ten miles; at the same time a large number of icebergs were in sight, extending as far as the eye could reach; some of the bergs were apparently one hundred feet high. S. S. "Baltic," in N. 43° 32', W. 47° 54', passed an iceberg. Bark "Cuba," in N. 42° 33', W. 51° 00', passed twenty-five icebergs.

29th.—S. S. "Baltic," in N. 42° 42', W. 50° 34', passed a very large iceberg; also in N. 42° 36', W. 51° 12', passed several large bergs. S. S. "Catalonia," between N. 42° 35', W. 50° 20', and N. 42° 27', W. 51° 32', passed several icebergs and a large ice-field. S. S. "Labrador," in N. 42° 30', W. 50° 20', passed a number of icebergs and large fields of ice. S. S. "Lord Gough," in N. 43°, W. 47°, passed five icebergs.

March, 1st.—S. S. "Azalea," in N. 42°, W. 50°, passed several icebergs.

2d.—S. S. "Pavonia," between N. 42° 12', W. 50° 20', and N. 42° 05', W. 50° 54', passed seven icebergs. S. S. "Persian Monarch," in N. 44° 09', W. 45° 00', passed a number of icebergs. S. S. "Abyssinia," from N. 42° 50', W. 48° 00', to N. 42° 30', W. 52° 10', passed from sixty to seventy large and small icebergs and many detached pieces of ice.

3d.—S. S. "Geiser," in N. 43°, W. 52°, saw about twenty icebergs. S. S. "Rialto," between N. 44° 24', W. 47° 02', and N. 43° 29', W. 50° 50', passed many icebergs.

S. S. "Main," between N. 44° 33', W. 45° 08', and N. 42° 24', W. 51° 25', passed a large number of icebergs and an ice-field about two miles long and twenty feet high; also several pieces of ice.

5th.—S. S. "Clintonia," in N. 45° 15', W. 45° 30', passed five icebergs.

6th.—S. S. "Britannic," in N. 42° 16', W. 48° 03', passed an iceberg about seventy feet high and two hundred and fifty feet long; also in N. 42° 06', W. 50° 13', passed two small bergs. S. S. "The Queen," between N. 42° 52', W. 48° 08', and N. 42° 45', W. 48° 55', passed several large icebergs and

a quantity of small ice. S. S. "Clintonia," in N. 43° 28', W. 50° 30', passed four large icebergs.

7th.—S. S. "Gallia," in N. 44° 00', W. 43° 30', passed an iceberg; also fifteen miles farther west passed a quantity of field-ice.

8th.—S. S. "Gallia," in N. 42° 34', W. 47° 23', passed an iceberg; also in N. 42° 10', W. 51° 25', passed another about twelve miles north of ship; also in N. 42° 08', W. 51° 51', passed three icebergs. S. S. "Furnessia," from N. 44° 26', W. 44° 15', to N. 44° 12', W. 44° 42', passed several small icebergs. S. S. "Italy," in N. 44° 20', W. 45° 40', passed several large icebergs. S. S. "Cornwall," between N. 43° 44', W. 47° 10', and N. 43° 20', W. 50° 18', passed a number of icebergs. S. S. "St. Laurent," in N. 44° 28', W. 46° 07', passed two icebergs; also in N. 43° 53', W. 48° 25', passed an ice-field.

9th.—S. S. "Italy," in N. 42° 35', W. 50° 22', passed two icebergs. S. S. "St. Laurent," in N. 43° 30', W. 50° 23', passed a small iceberg.

10th.—S. S. "Weser," at New York, reported, between N. 44° 30' and 42° 30' and W. 46° and 52°, passed numerous large icebergs. S. S. "Katie," in N. 43° 40', W. 44° 43', passed three icebergs, one of which was about forty feet and the others about thirty feet high.

12th.—S. S. "Grecian Monarch," in N. 42° 08', W. 50° 57', passed three icebergs.

### TEMPERATURE OF THE AIR.

[Expressed in degrees Fahrenheit.]

The distribution of mean temperature over the United States and Canada, for February, 1884, is exhibited on chart iii. by the dotted isothermal lines.

In the following table are shown the normal temperatures for February, the mean temperatures for February, 1884, and the departures from the normal in the several geographical districts, as deduced from the records of the Signal Service:

Average temperatures for February, 1884.

Districts.	Average for February. Signal-Service observations.		Comparison of Feb., 1884, with the average for several years.
	For several years.	For 1884.	
New England .....	28.2	31.6	3.4 above.
Middle Atlantic states .....	35.9	40.5	4.6 above.
South Atlantic states .....	49.8	54.9	5.1 above.
Florida peninsula .....	62.4	66.0	3.6 above.
Eastern Gulf states .....	53.1	55.5	2.4 above.
Western Gulf states .....	52.6	54.3	1.7 above.
Rio Grande valley .....	63.6	65.6	2.0 above.
Tennessee .....	44.4	47.3	2.9 above.
Ohio valley .....	36.0	39.4	2.8 above.
Lower lake region .....	26.2	27.2	1.0 above.
Upper lake region .....	21.8	17.7	4.1 below.
Extreme northwest .....	11.2	— 1.1	12.3 below.
Upper Mississippi valley .....	29.5	26.5	3.0 below.
Missouri valley .....	25.0	16.4	8.2 below.
Northern slope .....	24.1	12.8	11.3 below.
Middle slope .....	34.1	31.2	2.9 below.
Southern slope .....	49.1	50.4	1.3 above.
Southern plateau .....	46.0	47.5	1.5 above.
Northern plateau .....	32.4	27.2	5.2 below.
North Pacific coast region .....	41.5	36.1	5.4 below.
Middle Pacific coast region .....	50.0	47.6	2.4 below.
South Pacific coast region .....	56.0	56.2	0.2 above.
Mount Washington, N. H. ....	6.2	14.1	7.9 above.
Pike's Peak, Colo. ....	3.4	2.6	0.8 below.
Salt Lake City, Utah .....	31.4	31.3	0.1 below.

A line of normal temperatures extends from Lake Huron in a southwesterly direction to northern Arkansas and central Indian Territory, thence in a direction slightly north of west to Salt Lake City, Utah, and thence southwestward to the southern California coast. North of the line mentioned, the mean temperatures were below the normal, and south of it they were above. The departures below the normal were more marked than those above—ranging from 9° to 12° in the extreme northwest, northern slope, and Missouri valley. In the districts where the temperatures averaged above the normal, the departures were greatest in the middle and south Atlantic states, where they were 4° 6 and 5° 1, respectively. The distribution of the mean temperatures of February, 1884,

compared with that of the preceding month, shows a decided contrast in respect to departures from the normal. For January the districts of maximum departures below the normal were the Ohio valley, Tennessee, and the eastern Gulf states, while for February the mean temperatures in those districts averaged from 2°.4 to 2°.9 above the normal. In the extreme northwest, Missouri valley, and northern slope the mean temperatures for January averaged from 0°.9 above the normal in the last-named district to 3°.1 and 4°.2 below, respectively, in the Missouri valley and northern slope, while for February the departures in the same districts varied from 9°.2 to 12°.3 below the normal.

The general distribution of mean temperature and the districts of maximum departures from the normal for the month of February, in each year, from 1873 to 1883, inclusive, are as follows:

Districts.	Maximum departures.	Year.	Distribution.
		1873...	{ Above the normal in the Gulf states, in the eastern parts of Kentucky and Tennessee, and the southern parts of Ohio and Indiana, from 1° to 4°; below the normal in the other districts east of the Rocky mountains, from 1° to 3°.
		1874...	{ Normal in the upper Mississippi valley, lower lake region, and New England; below the normal in Minnesota and the Missouri valley; above the normal in the upper lake region, western Gulf states, and in the districts east of the Mississippi river south of the fortieth parallel.
Minnesota.....	-17.0	1875...	{ Below the normal over the whole country, the departures being least on the Pacific coast and in the south Atlantic states.
Upper lake region.....	-15.2		
Lower Missouri valley.....	-13.5		
Lower lake region.....	-12.3		
Saint Lawrence valley.....	-9.1		
Lower Missouri valley.....	+4.7	1876...	{ Normal in the lower lake region; below the normal in Minnesota and the Saint Lawrence valley; above the normal in all other districts east of the Rocky mountains.
Upper Mississippi valley.....	+4.6		
Ohio valley and Tennessee.....	+4.1		
Saint Lawrence valley.....	+3.0		
Minnesota.....	-2.0		
Minnesota.....	+13.4	1877...	{ Normal in the south Atlantic states; slightly below the normal in the Gulf states; above the normal in all other districts, the departures being least on the Pacific coast.
Upper Mississippi valley.....	+11.5		
Missouri valley.....	+10.9		
Upper lake region.....	+8.9		
Saint Lawrence valley.....	+8.0		
Gulf states.....	-0.9		
Minnesota.....	+18.7	1878...	{ Below the normal at the Rocky mountain stations and in the Gulf states; above the normal in all other districts, the departures being least in the south Atlantic states and on the Pacific coast.
Upper Missouri valley.....	+16.4		
Upper lake region.....	+10.7		
Lower Missouri valley.....	+8.9		
Gulf states.....	-2.6		
Rocky mountain stations.....	-2.3		
Northern slope.....	+2.9	1879...	{ Normal in the north Pacific coast region and southern slope; below the normal in all other districts east of the Rocky mountains, excepting the northern slope and Canadian maritime provinces; also below the normal in southern California; above the normal in the western plateau districts and middle Pacific coast region.
Canadian maritime provinces.....	+1.5		
San Francisco, California.....	+1.3		
Saint Lawrence valley.....	+6.4		
New England.....	-4.6		
Missouri valley.....	-2.8		
Eastern Gulf states.....	-2.6		
Lower lake region.....	+6.5	1880...	{ Below the normal in the extreme northwest, Rio Grande valley, eastern Rocky mountain slope, and on the Pacific coast; above the normal in the lake region, Missouri, upper Mississippi, Ohio, and Saint Lawrence valleys, and in the states bordering on the Atlantic and Gulf coasts.
Middle Atlantic states.....	+6.3		
South Atlantic states.....	+5.7		
Sacramento, California.....	-8.3		
Salt Lake City, Utah.....	-5.7		
Northern slope.....	-5.3		
Salt Lake City, Utah.....	+6.3	1881...	{ Normal in New England, Florida, and the northern plateau; above the normal in the middle and southern plateau districts and on the Pacific coast; below the normal in all other districts east of the Rocky mountains, excepting New England and Florida.
North Pacific coast region.....	+3.7		
Middle Pacific coast region.....	+3.6		
Lower Missouri valley.....	-0.0		
Upper Mississippi valley.....	-5.0		
Middle slope.....	-5.0		
Upper Mississippi valley.....	+9.9	1882...	{ Below the normal in the western plateau districts and on the Pacific coast; above the normal in all districts east of the Rocky mountains, the departures being least in New England and Florida.
Ohio valley.....	+8.8		
Tennessee.....	+8.7		
Middle plateau.....	-7.2		
Northern plateau.....	-5.8		
Middle Pacific coast region.....	-5.3		
Florida peninsula.....	+6.5	1883...	{ Normal in the Ohio valley; above the normal in Tennessee and in the middle and south Atlantic and eastern Gulf states; below the normal in all other districts, the departures being least in New England and the southern plateau.
South Atlantic states.....	+4.3		
Eastern Gulf states.....	+3.9		
Northern plateau.....	-10.6		
Middle slope.....	-12.8		
Northern slope.....	-8.8		

The following are some of the highest and lowest monthly mean temperatures reported from the Signal Service stations:

Stations reporting highest.	Stations reporting lowest.
Key West, Florida..... 72.5	Saint Vincent, Minnesota..... -8.0
Rio Grande City, Texas..... 66.5	Moorhead, Minnesota..... -3.9
Sanford, Florida..... 65.3	Fort Yates, Dakota..... -0.4
Brownsville, Texas..... 64.8	Bismarck, Dakota..... -0.1
Cedar Keys, Florida..... 63.4	Fort Buford, Dakota..... 0.1
Jacksonville, Florida..... 63.1	Pike's Peak, Colorado..... 2.6
New Orleans, Louisiana..... 60.7	Fort Assinaboine, Montana..... 3.4
Galveston, Texas..... 60.4	Huron, Dakota..... 5.5
Indianola, Texas..... 60.2	Fort Bennett, Dakota..... 5.6
Pensacola, Florida..... 58.9	Fort Custer, Montana..... 7.3
Savannah, Georgia..... 58.3	Duluth, Minnesota..... 7.6
Yuma, Arizona..... 57.3	Fort Benton, Montana..... 9.0
Mobile, Alabama..... 57.3	Fort Maginnis, Montana..... 9.3

#### MONTHLY RANGES OF TEMPERATURE.

The monthly ranges of temperature were greatest in the northern parts of Dakota, Montana and Idaho, in southeastern Colorado, and over an area including central-southern Oregon and northeastern California. They were least at stations along the coasts of the Atlantic and Pacific oceans and Gulf of Mexico.

Stations reporting monthly ranges of 70° or more are as follows: West Las Animas, Colorado, 94°; Fort Bidwell, California, 88°; Forts Buford and Yates, Dakota, and Fort Shaw, Montana, 85°; Fort Klamath, Oregon, 84°; Fort Bennett, Dakota, 83°; Cœur d'Alene, Idaho, 80°; North Platte, Nebraska, Linkville, Oregon, and Fort Spokane, Washington Territory, 79°; Fort Custer, Montana, and Cheyenne, Wyoming, 78°; Deadwood, Dakota, 77°; Huron, Dakota, and Denver, Colorado, 76°; Yankton, Dakota, 75°; Cantonment, Indian Territory, 74°; Fort Elliott, Texas, Lewistown, Idaho, Pittsburg, Pennsylvania, and Bismarck, Dakota, 73°; Helena, Montana, and Port Huron, Michigan, 72°; Lake View, Oregon, Dodge City, Kansas, Detroit, Michigan, and Erie, Pennsylvania, 70°.

Monthly ranges of 45° or less occurred at the following stations: Oswego, New York, and Pensacola, Florida, 45°; Willcox, Arizona, New Orleans, Louisiana, Atlantic City, New Jersey, Smithville and Hatteras, North Carolina, Block Island, Rhode Island, 44°; Sanford, Florida, 43°; Los Angeles, California, Albany, New York, Point Judith, Rhode Island, Fort Macon, North Carolina, and Jacksonville, Florida, 42°; Portland, Maine, Chincoteague, Virginia, and Cape May, New Jersey, 41°; Cape Mendocino, California, Cedar Keys, Florida, and Eastport, Maine, 40°; Little Egg Harbor, New Jersey, 39°; San Francisco, California, 36°; Neah Bay, Washington Territory, 31°; Key West, Florida, 23°.

#### GREATEST DAILY RANGES OF TEMPERATURE.

The greatest daily ranges of temperature have varied in the different districts as follows:

*New England.*—From 26° at Eastport, Maine, and New London, Connecticut, on the 1st and 20th, respectively, to 32° at Provincetown, Massachusetts, on the 29th, and 44° on the summit of Mount Washington, New Hampshire, on the 20th.

*Middle Atlantic states.*—From 24° at Cape May, New Jersey, on the 28th, and at Atlantic City, New Jersey, on the 20th and 28th, to 30° at Cape Henry, Virginia, on the 14th.

*South Atlantic states.*—From 25° at Savannah, Georgia, on the 22d, to 34° at Kitty Hawk, North Carolina, on the 28th.

*Florida peninsula.*—From 14° at Key West, on the 27th, to 30° at Sanford, on the 28th.

*East Gulf states.*—From 23° at New Orleans, Louisiana, on the 27th, to 34° at Montgomery, Alabama, on the 19th.

*West Gulf states.*—From 26° at Indianola, Texas, on the 13th, to 34° at Galveston, Texas, and Fort Smith, Arkansas, on the 13th and 25th, respectively.

*Rio Grande valley.*—From 40° at Rio Grande City, Texas, on the 16th, to 42° at Brownsville, Texas, on the 13th.

*Tennessee.*—From 27° at Chattanooga, on the 14th, to 31° at Memphis and Nashville, on the 13th and 19th, respectively.

Table of maximum and minimum temperatures for February, 1884.

State or Territory.	Signal Service.			U. S. Army Post Surgeons, or Voluntary Observers.		
	Station.	Max.	Min.	Station.	Max.	Min.
Alabama	Mobile	70	29	Auburn	74	0
Do	Montgomery	81	22	Mt. Vernon Bar'ks.	80	24
Arizona	Willcox	89	45	Fort Lowell	86	20
Do	Fort Apache	69	8	San Simon	74	20
Arkansas	Little Rock	76	17	Lead Hill	73	0
Do	Fort Smith	75	10	Mount Ida	70	10
California	Los Angeles	81	38	Borden	97	28
Do	Fort Bidwell	67	-21	Summit	43	-7
Colorado	West Las Animas	71	-23	Fort Lyon	69	-23
Do	Pike's Peak	20	-30	Gunnison	36	-27
Connecticut	New Haven	53	1	Southington	48	1
Do	New London	52	3	Voluntown	55	0
Dakota	Yankton	52	-23	Fort Pembina	34	-37
Do	Fort Buford	45	-40	Fort Sully	57	-30
Delaware	Del. Breakwater	64	15	Rock Creek Bridge	74	11
District of Columbia	Washington City	70	9	Archer	86	36
Florida	Key West	83	60	Fort Barrancas	85	27
Do	Pensacola	74	29	Andersonville	81	26
Georgia	Augusta	78	24	Foreyth	78	20
Do	Atlanta	73	11			
Idaho	Coeur d'Alene	60	-20			
Do	Lewiston	55	-18			
Illinois	Cairo	69	12	Galeonda	69	8
Do	Chicago	53	-3	Polo	39	-12
Indiana	Indianapolis	65	-2	Laconia	70	3
Do				Fort Wayne	57	-7
Indian Territory	Cantonment	74	-1			
Iowa	Des Moines	54	-8	Logan	56	-10
Do	Dubuque	42	-8	West Bend	45	-23
Kansas	Dodge City	65	-5	Topeka	68	-5
Do	Leavenworth	57	-1	Allison	60	-20
Kentucky	Louisville	70	9	Frankfort	69	4
Louisiana	Shreveport	78	19	Grand Coteau	78	28
Do	New Orleans	77	33	Liberty Hill	71	22
Maine	Portland	49	8	Cornish	47	3
Do	Eastport	45	4	Orono	44	-8.4
Maryland	Baltimore	68	10	Receiving Reservoir	72	10
Do	Ocean City	55	15	Cumberland	62	3
Massachusetts	Boston	59	3	Westborough	60	2
Do	Provincetown	49	0	Princeton	52	-2
Michigan	Port Huron	64	-6	Swartz Creek	61	-16
Do	Mackinaw City	39	-17	Fort Brady	38	-29
Minnesota	Saint Paul	45	-18	Chester	40	-24
Do	Saint Vincent	30	-37	Hastings	37	-26
Mississippi	Vicksburg	80	23			
Missouri	Saint Louis	64	7	Peirce City	70	-6
Do				Conception	53	-10
Montana	Fort Assinaboine	42	-35	Fort Keogh	55	-38
Do	Fort Benton	53	31	Fort Shaw	53	-21
Nebraska	North Platte	59	-20	Fort Niobrara	64	-38
Do	Omaha	55	-12	Fort Robinson	56	-39
Nevada				Golconda	71	-17
New Hampshire	Mount Washington	39	-30	Hallock	52	-45
New Jersey	Sandy Hook	62	6	Bristol	48	-2
Do	Atlantic City	55	11	Vineland	67	10
New Mexico	Fort Craig	70	9	Somerville	55	0.5
Do	Fort Stanton	68	4	Fort Union	57	-21
New York	New York City	61	2	Fort Wingate	56	-8
Do	Buffalo	55	-7	Fort Niagara	57	-3
North Carolina	Charlotte	75	18	Humphrey	54	-13
Do	Scotts Hill	78	24	Chapel Hill	70	-16
Ohio	Cincinnati	67	6	Highlands	74	-4
Do	Cleveland	64	-4	Waverly	78	0.5
Oregon	Roseburg	68	3	Hiram	60	-12
Do	Fort Klamath	50	-34	Albany	66	8
Pennsylvania	Pittsburg	70	-3	Fort Klamath	56	-30
Do	Erie	63	7	Leetadale	65	0
Rhode Island	Block Island	54	10	Franklin	59	-12
Do	Point Judith	47	4			
South Carolina	Charleston	47	9			
Do				Aiken	76	18
Tennessee	Knoxville	74	8	Statelburg	75	21
Do	Nashville	72	10	Highland	72	13
Texas	Rio Grande City	92	33	Ashwood	70	1
Do	Fort Elliott	74	2	Claburne	78	10
Utah	Salt Lake City	53	-13	Clarksville	75	10
Do				Terrace	60	-20
Vermont				Promontory	55	-32
Do				Dorset	57	1
Virginia	Cape Henry	74	19	Burlington	49	-19
Do	Lynchburg	69	11	Johnsontown	76	19
Washington Territory	Fort Canby	68	6	Marion	68	0
Do	Fort Spokane	47	-32	Fort Spokane	49	-32
West Virginia				Fort Townsend	57	8
Wisconsin	Milwaukee	45	-13	Helvetia	68	-2
Do	La Crosse	43	-10	Wausau	36	-20
Wyoming	Cheyenne	50	-28	Evansville	47	-10
				Fort Bridger	44	39

**Ohio valley.**—From 25° at Cincinnati, Ohio, on the 4th, to 39° at Pittsburg, Pennsylvania, on the 14th.

**Lower lake region.**—From 26° at Toledo, Ohio, Sandusky, Ohio, and Detroit, Michigan, on the 5th, 13th, and 14th, respectively, to 38° at Cleveland, Ohio, on the 20th.

**Upper lake region.**—From 27° at Grand Haven, Michigan, on the 27th, to 41° at Marquette, Michigan, on the 19th.

**Extreme northwest.**—From 38° at Fort Buford, Dakota, on the 28th, to 53° at Moorhead, Minnesota, on the 24th.

**Northern slope.**—From 32° at Helena, Montana, on the 17th, to 52° at Deadwood, Dakota, on the 17th.

**Middle slope.**—From 29° on the summit of Pike's Peak, Colorado, on the 19th, to 54° at West Las Animas, Colorado, on the 24th.

**Southern slope.**—From 38° at Fort Davis, Texas, on the 28th, to 46° at Fort Concho, Texas, on the 25th.

**Southern plateau.**—From 26° at Fort Grant, Arizona, on the 22d, to 43° at Fort Apache, Arizona, on the 24th.

**Middle plateau.**—31° at Salt Lake City, Utah, on the 15th.

**Northern plateau.**—From 27° at Boise City, Idaho, on the 14th, to 31° at Lewiston, Idaho, on same date.

**North Pacific coast region.**—From 25° at Portland, Oregon, on the 8th, and at Fort Canby, Washington Territory, on the 28th, to 32° at Olympia, Washington Territory, on the 13th, and at Roseburg, Oregon, on the 29th.

**Middle Pacific coast region.**—From 18° at San Francisco, California, on the 26th, to 36° at Red Bluff, California, on the 25th.

**South Pacific coast region.**—From 30° at Los Angeles, California, on the 23d, to 31° at Yuma, Arizona, on the 26th.

#### DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average temperatures for February, 1884. The following notes in connection with this subject are reported by voluntary observers:

**Arkansas.**—Lead Hill, Boone county: mean temperature, 38° 3, is 5° 1 below the February average of the two preceding years.

**Illinois.**—Mattoon, Coles county: mean temperature, 33° 5, is 1° 5 above the February average of the last five years.

**Riley, McHenry county:** mean temperature, 20° 5, is 1° 9 below the February average of the last twenty-three years. The mean temperature of the winter season of 1883-4, is 17° 8 or 3° 1 below the winter average of the last twenty-one years.

**Anna, Union county:** mean temperature, 38° 7, is 0° 6 below the February average of the last nine years.

**Indiana.**—Wabash, Wabash county: mean temperature, 30° 5, is 3° 4 below the February average of the last eight years.

**Kansas.**—Fort Scott, Bourbon county, mean temperature, 32° 2, is 2° 4 below the February average of the last four years.

**Independence, Montgomery county:** mean temperature, 31° 0, is 4° 2 below the February average of the last thirteen years.

**Wellington, Sumner county:** mean temperature, 26° 6, is 7° 9 below the February average of the last five years.

**Lawrence, Douglas county:** mean temperature, 28° 0, is 5° 2 below the February average of the last seventeen years.

**Maine.**—Gardiner, Kennebec county: mean temperature, 25° 5, is 4° 8 above the February average of the last forty-eight years.

**Maryland.**—Fallston, Harford county: mean temperature, 37° 4, is 5° 1 above the February average of the last thirteen years.

**Massachusetts.**—Worcester, Worcester county: mean temperature, 28° 3, is nearly 3° above the February average of the last forty-five years. The highest February mean of that period, 33° 9, occurred in 1842; the lowest, 18° 1, occurred in 1849.

**New Jersey.**—South Orange, Essex county: mean temperature, 33° 2, is 3° above the February average of the last fourteen years.

**Moorestown, Burlington county:** mean temperature, 36° 6, is 5° 2 above the February normal.

**New York.**—Palermo, Oswego county: mean temperature, 23° 8, is 2° 5 above the February average of the last thirty-one years.

**North Volney, Oswego county:** mean temperature, 26° 3, is 3° 6 above the average of the last sixteen years. The mean

temperature of the winter season of 1883-4, is 23°.1 or 0°.3 above the winter average of the last sixteen years.

**Ohio.**—Wauseon, Fulton county: mean temperature, 26°.2, is 2° below the February average of the last fourteen years.

**Texas.**—New Ulin, Austin county: mean temperature, 56°.3, 0°.4 below the February average of the last twelve years. The highest February mean of that period, 62°.0, occurred in 1882; the lowest, 52°.6, occurred in 1883.

**Virginia.**—Variety Mills, Nelson county: mean temperature, 43°.4, is 3°.5 above the February average of the last seven years.

Wytheville, Wythe county: mean temperature, 43°.1, is 6° above the February average of a period of twenty years.

**West Virginia.**—Helvetia, Randolph county: mean temperature, 40°.6, is 4°.3 above the February average of the last eight years.

#### LOW TEMPERATURES.

Atlanta, Georgia.—Very cold weather prevailed on the 11th; minimum temperature of that date, 11°.

Olympia, Washington Territory.—On the morning of the 11th the temperature fell to 2° at the signal office, and thermometers exposed on the hill in the southern part of the town showed a temperature of -5°, which is the lowest ever recorded in that locality.

Leadville, Colorado.—The 13th was the coldest day of the season; at 6 p. m. the thermometer indicated 30° below zero.

West Las Animas, Colorado.—A minimum temperature of -22°.7 occurred on the 14th, which is the lowest that has been recorded here since meteorological observations were begun in February, 1882.

Knoxville, Tennessee.—A minimum temperature of 7°.5 occurred on the 29th, which is the lowest recorded during February since 1873.

Milledgeville, Baldwin county, Georgia.—The minimum temperature on the last day of the month was 18°, which is remarkably low to occur at so late a date in this region.

Pensacola, Florida.—Very cold weather for the season prevailed on the 29th; minimum temperature, 29°.

Table of comparative minimum temperatures for the month of February.

State or Territory.	Minimum for February, 1884, Signal Service.		Minimum since Signal-Service stations were opened—3 to 13 years.			Lowest from any other source.			
	Station.	Temp.	Station.	Temp.	Year.	Place.	Temp.	Year.	Length of Record.
Alabama	Montgomery	0	Montgomery	22	1875	Huntsville	-17		9 years.
Do	Mobile	20	Mobile	28	75, 76	Mount Vernon Arsenal	13		32 "
Arizona	Fort Apache	8	Prescott	-11	1880	Fort Canby (old)	-12		12 "
Arkansas	Fort Smith	10	Little Rock	22	1881	Fort Smith	-4	1840	22 "
California	Cape Mendocino	28	Campo	10	1877	Fort Bidwell	-16	1868	19 "
Colorado	Pike's Peak	-30	Pike's Peak	-37	1875	Fort Garland	-23		30 "
Do	Denver	-15	Denver	-20	1881	Fort Lewis	-30	1880	1 "
Connecticut	New Haven	1	New Haven	-4	1881	New Haven	-16		86 "
Do	New London	3	New London	-3	1873	Colebrook	-28	1861	14 "
Dakota	Fort Buford	-40	Pembina	-48	1870	Fort Abercrombie	-40	61, 69	16 "
Do	Fort Yates	-39	Fort Buford	-35	1879	Fort Pembina	-45	1875	7 "
Delaware	Delaware Breakwater	15	Delaware Breakwater	7	1881	Dover	7	1875	0 "
District of Columbia	Washington City	9	Washington City	-1.5	1875	Washington City	-5		49 "
Florida	Pensacola	29	Saint Marks	28	1875	Fort Barrancas	11		58 "
Georgia	Atlanta	11	Atlanta	21	1881	Augusta Arsenal	-2	1835	51 "
Do	Augusta	24	Augusta	22	1875	Atlanta	15		4 "
Idaho	Coeur d'Alene	-20	Eagle Rock	-29	1882	Fort Hall	-13	1880	15 "
Illinois	Chicago	-3	Chicago	-13	1875	Winnebago	-29		11 "
Do	Cairo	12	Cairo	-4	1875	Belvidere	-31.5	1875	5 "
Indiana	Indianapolis	-2	Indianapolis	-8	1875	Spiceland	-21	1860	14 "
Indian Territory	Cantonment	-1	Fort Supply	-8	1881	Fort Arbuckle	-4	50, 57	20 "
Do			Fort Gibson	5	1875	Fort Gibson	-12		49 "
Iowa	Dubuque	-8	Dubuque	-31	1875	Guttenberg	-37	1858	11 "
Do	Davenport	-4	Davenport	-16	1875	Brookside	-35	1868	5 "
Kansas	Dodge City	-5	Dodge City	-10	1881	Fort Riley	-18		22 "
Do	Leavenworth	-1	Leavenworth	-9	73, 75	Fort Leavenworth	-26		50 "
Kentucky	Louisville	9	Louisville	0	1875	Newport Barracks	-20		29 "
Louisiana	Shreveport	19	Shreveport	22	75, 81	Fort Jesup	7		23 "
Do	New Orleans	33	New Orleans	32.5	1875	Baton Rouge	10		57 "
Maine	Eastport	4	Eastport	-20	1870	Brunswick	-28		53 "
Do	Portland	8	Portland	-7	74, 76	Gardiner	-25		34 "
Maryland	Baltimore	10	Baltimore	2	1873	Fort McHenry	0	1875	50 "
Do	Ocean City	15				Deer Park	-10	1881	1 "
Massachusetts	Boston	3	Boston	-6.5	1876	Williamstown	-26		61 "
Do	Provincetown	0	Springfield	-6	1880	Lunenburg	-26		24 "
Michigan	Marquette	-29	Escanaba	-32	1875	Fort Brady	-55	1875	59 "
Do	Escanaba	-20	Marquette	-27	1875	Ontonagon	-37	1861	11 "
Minnesota	Saint Vincent	-37	Saint Vincent	-35	1882	Fort Ripley	-43		18 "
Do	Moorhead	-30	Breckenridge	-34	75, 79	Sibley	-37	1866	5 "
Mississippi	Vicksburg	23	Vicksburg	21	1875	Columbus	14		10 "
Missouri	Saint Louis	7	Saint Louis	-3	1875	Saint Louis	-25	1835	44 "
Montana	Fort Benton	-35	Fort Benton	-34	1873	Fort Ellis	-53	1872	13 "
Nebraska	North Platte	-20	North Platte	-23	1881	Fort McPherson	-24	1874	13 "
Do	Omaha	-12	Omaha	-10	1875	Camp Sheridan	-29	1881	5 "
Nevada	Winnemucca	-17	Winnemucca	-17	1882	Fort Ruby	-19		6 "
New Hampshire	Mount Washington	-30	Mount Washington	-42	1876	Stratford	-37	1861	11 "
New Jersey	Sandy Hook	6	Atlantic City	-5	1875	Newark	-7	1861	14 "
Do	Atlantic City	11	Squan Beach	-5	1875	Paterson	-5		6 "
New Mexico	Fort Stanton	4	Santa Fe	-3	79, 80	Fort Union	-21	1881	29 "
New York	Buffalo	-7	Albany	-18	1875	Sackett's Harbor	-46	1861	8 "
Do	Rochester	0	Buffalo	-13	1875	Delleville	-34		15 "
North Carolina	Charlotte	18	Wilmington	15	1875	Fort Johnson	3		58 "
Do	Kitty Hawk	21	Kitty Hawk	11	1881	Fort Macon	20		16 "
Ohio	Cleveland	-4	Toledo	-12	1875	Hillsborough	-22	1838	35 "
Do	Sandusky	-3	Sandusky	-11	1875	Marietta	-18		53 "
Oregon	Fort Klamath	-34	Umatilla	0	1881	Camp Harney	-10	1868	12 "
Do	Portland	-7	Portland	24	1875	Camp Warner	-3		7 "
Pennsylvania	Erie	-7	Erie	-16	1875	Lewisburg	-23	65, 67	
Do	Pittsburg	-3	Pittsburg	-12	1875	Philadelphia	-2		113 "
Rhode Island	Narragansett Pier	4	Newport	-2	1881	Providence	-10		35 "
South Carolina	Charleston	9	Charleston	26	1881	Charleston	22		105 "
Do						Fort Moultrie	0		38 "
Tennessee	Knoxville	8	Knoxville	6	1873	Glenwood Cottage	-4		11 "
Texas	Fort Elliott	2	Fort Elliott	-1	1881	Fort McKavett	8		28 "
Do	Fort Davis	20	Fort Davis	0	1881	Camp Verde	9	1857	13 "
Utah	Salt Lake City	-13	Salt Lake City	-3	1874	Fort Crittenden	-6		3 "
Vermont	Burlington	-18	Burlington	-18	1881	Randolph	-31	1868	5 "
Virginia	Chincoteague	18	Fort Myer	1	1881	Alexandria	3	1855	12 "
Do	Lynchburg	11	Lynchburg	3	1875	Fortress Monroe	4		49 "
Washington Territory	Fort Spokane	-32	Spokane Falls	-7	1881	Fort Colville	-20		15 "
West Virginia			Morgantown	-10	1875	Helvetia	-6	1880	3 "
Wisconsin	La Crosse	-10	La Crosse	-34	1875	Fort Howard	-38	1823	31 "
Do	Milwaukee	-13	Milwaukee	-32	1875	Superior City	-38	1863	3 "
Wyoming	Cheyenne	-28	Cheyenne	-24	1874	Fort Fetterman	-40	1873	1 "

## FROSTS.

Frosts occurred in the various districts on the following dates:

*New England.*—1st to 29th.

*Middle Atlantic states.*—1st to 5th, 8th to 11th, 14th to 29th.

*South Atlantic states.*—2d, 3d, 15th, 16th, 18th to 22d, 24th to 29th.

*Eastern Gulf states.*—2d, 15th, 20th, 21st, 22d, 24th, 25th, 29th.

*Western Gulf states.*—1st, 2d, 3d, 14th, 15th, 16th, 20th, 21st, 23d to 26th, 28th, 29th.

*Tennessee.*—1st, 2d, 3d, 5th, 9th, 13th to 16th, 19th to 29th.

*Ohio valley.*—1st, 2d, 3d, 10th, 13th to 16th, 19th to 22d, 25th, 27th, 29th.

*Lower lake region.*—1st to 4th, 7th, 16th, 21st, 22d, 24th, 28th, 29th.

*Upper lake region.*—1st to 29th.

*Extreme northwest.*—1st to 29th.

*Upper Mississippi valley.*—1st to 29th.

*Missouri valley.*—1st to 29th.

*Northern slope.*—1st to 29th.

*Middle slope.*—1st to 29th.

*Southern slope.*—9th, 28th.

*Southern plateau.*—9th, 10th, 12th, 13th, 14th, 17th, 19th to 29th.

*Middle plateau.*—1st to 29th.

*Northern plateau.*—1st, 6th, 7th, 8th, 10th to 14th, 25th to 29th.

*North Pacific coast region.*—1st to 18th, 23d, 26th to 29th.

*Middle Pacific coast region.*—5th to 14th, 18th, 21st, 22d, 23d, 25th, 27th, 28th, 29th.

Frosts were also reported at Yuma, Arizona, on the 13th and 14th, and at Archer, Florida, on the 3d, 4th, 21st and 24th.

The following instances of damage to vegetation by frost have been reported:

Cleburne, Johnson county, Texas.—A heavy frost occurred on the 1st, causing serious injury to the oat crop.

Wilmington, North Carolina.—A heavy frost occurred on the 29th, damaging the fruit trees and early vegetation.

Milledgeville, Baldwin county, Georgia.—Vegetation in this part of the state was much retarded and seriously injured by the cold weather during the last half of the month, which was characterized by sudden changes of temperature.

## ICE.

Under the heading "ice in rivers and harbors" in this REVIEW the subject of ice formation in the northern sections of the country is considered. In the Southern states the following instances of ice formation have been reported:

*Alabama.*—Auburn, 15th, 20th, 28th, 29th; Green Springs, 28th, 29th.

*Arizona.*—Fort Grant, 13th, 14th.

*California.*—Red Bluff, 8th, 11th, 13th; Sacramento, 6th, 7th, 8th to 14th; Salinas City, 13th.

*Florida.*—Jacksonville, ice formed one and one-half inches in thickness on the 29th; Pensacola, 29th.

*Georgia.*—Atlanta, 28th.

*North Carolina.*—Brevard, 16th, 20th, 21st, 22d, 24th to 29th; New River Inlet, 24th, 29th.

*Texas.*—El Paso, 28th; Galveston, 14th; Indianola, 14th, 15th.

## PRECIPITATION.

[Expressed in inches and hundredths.]

The precipitation for February, 1884, in the north Pacific coast region was 4.22 below the average. Slight deficiencies—ranging from 0.17 to 0.64—occurred in the Florida peninsula, west Gulf states, and southern slope. In the Rio Grande valley, where the February average for several years is 0.98, no rain fell during the month, except an inappreciable amount at Brownsville, Texas. In the south Atlantic states and middle slope the monthly precipitation was about the average. In all other districts it was above the average. Large excesses occurred in southern California, New England, the middle

Atlantic states, Ohio valley, and Tennessee. At Los Angeles, California, the monthly precipitation was 13.37, or nearly four times as great as the February average of the last twelve years. In the middle Atlantic states, New England, and the Ohio valley the excesses over the average were large and singularly uniform, being 2.59, 2.61, and 2.63 respectively; in Tennessee the excess amounted to 3.64. In the other districts where the precipitation was excessive the departures were less than 1.00, except in the lower lake region, where it was 1.30.

The general distribution of rainfall for the month of February and the districts of maximum departures from the normal in each year from 1873 to 1883, inclusive, are as follows:

Districts.	Maximum departures.	Year.	Distribution.
		1873...	Deficient in the lake region, northwest, Gulf states, southern parts of Georgia and South Carolina, New York, northern Ohio, and northern New England; excessive in the northern parts of Alabama, Georgia, and South Carolina, in Tennessee, southern parts of Indiana and Ohio, Pennsylvania and southern New Jersey, Rhode Island and eastern Massachusetts and Connecticut.
		1874...	Normal in the middle Atlantic states and Minnesota; deficient in the upper Mississippi valley, upper lake region, New England, and eastern Gulf states; excessive in the Missouri, Ohio and Saint Lawrence valleys, the south Atlantic and western Gulf states, and Tennessee.
Eastern Gulf states.....	+ 2.00	1875...	Normal in the upper lake region; deficient in the lower lake region, Ohio and Saint Lawrence valleys, and on the Pacific coast; excessive in Minnesota, the upper Mississippi and Missouri valleys, Tennessee, Gulf states, and in the districts on the Atlantic coast.
Western Gulf states.....	+ 1.85		
South Atlantic states.....	+ 1.20		
Pacific coast.....	+ 2.08		
Ohio valley.....	+ 1.85		
Saint Lawrence valley.....	+ 1.01		
Lower lake region.....	+ 2.30	1876...	Normal in Minnesota and the lower Missouri valley; excessive in the lake region, upper Mississippi and Saint Lawrence valleys, New England, the middle Atlantic and western Gulf states; deficient in the Ohio valley, Tennessee, and in the south Atlantic and eastern Gulf states.
Saint Lawrence valley.....	+ 1.00		
Western Gulf states.....	+ 1.60		
Ohio valley and Tennessee.....	+ 1.00		
Eastern Gulf states.....	+ 0.85		
Portland, Oregon.....	+ 0.66	1877...	Slight excess at Portland, Oregon; deficient in California and east of the Rocky mountains, the departures exceeding 1.00 in all districts, excepting the Missouri valley, Minnesota, south Atlantic and western Gulf states.
Tennessee and Ohio valley.....	+ 2.90		
Eastern Gulf states.....	+ 2.50		
Lower lake region.....	+ 2.35		
Saint Lawrence valley.....	+ 2.25		
New England.....	+ 2.10		
California coast.....	+ 0.12	1878...	Normal in the upper lake region and in the upper Mississippi and lower Missouri valleys; very large excess on the Pacific coast, and slight excess in the lower lakes and New England; deficient in Tennessee, the Ohio and Saint Lawrence valleys, Gulf states, and on the Atlantic coast south of New England.
Portland, Oregon.....	+ 5.27		
Tennessee.....	+ 2.18		
Ohio valley.....	+ 1.50		
Saint Lawrence valley.....	+ 1.33		
Middle Atlantic states.....	+ 1.25		
Portland, Oregon.....	+ 5.62	1879...	Excessive on the Pacific coast, in Minnesota, and the upper lake region; deficient in all other districts, the departures being very slight in the lower lake region, New England, and south Atlantic states.
Upper lake region.....	+ 0.45		
California coast.....	+ 9.42		
Western Gulf states.....	+ 1.00		
Middle Atlantic states.....	+ 1.30		
Ohio valley.....	+ 1.20		
Tennessee.....	+ 4.54	1880...	Normal in Minnesota; excessive in the lake region, upper Mississippi, Ohio, and Saint Lawrence valleys, New England, Florida, Tennessee, and the western Gulf states; deficient on the Pacific coast, in the lower Missouri valley, middle and south Atlantic and Gulf states.
Saint Lawrence valley.....	+ 2.47		
Ohio valley.....	+ 1.55		
Portland, Oregon.....	+ 2.51		
California coast.....	+ 1.77		
Portland, Oregon.....	+ 4.43	1881...	Deficient in California, the upper Missouri valley, south Atlantic states and Florida; excessive in all other districts.
Upper lake region.....	+ 3.09		
Lower Missouri valley.....	+ 2.83		
Eastern Gulf states.....	+ 2.83		
South Pacific coast region.....	+ 1.87		
Upper Missouri valley.....	+ 1.58		
Ohio valley.....	+ 3.74	1882...	Deficient in Florida, the Rio Grande valley, and over the region between the ninety-second meridian and the Pacific coast north of the thirty-fifth parallel; excessive in all other districts.
Tennessee.....	+ 3.16		
Eastern Gulf states.....	+ 1.95		
Florida.....	+ 2.69		
Middle Pacific coast region.....	+ 1.98		
South Atlantic states.....	+ 0.57		
Ohio valley.....	+ 3.86	1883...	Normal in the middle slope; deficient on the Pacific coast, in the northern and middle plateau districts, extreme northwest, and in the south Atlantic and Gulf states; excessive in all other districts.
Lower lake region.....	+ 1.74		
Middle Atlantic states.....	+ 1.38		
North Pacific coast region.....	+ 5.46		
Middle Pacific coast region.....	+ 3.80		
Florida peninsula.....	+ 3.21		